

Amendments to the Claims

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

Listing of Claims

1. (currently amended) A longitudinally extending foot keel for a prosthetic foot, the foot keel comprising:

a hindfoot portion having a posterior plantar surface weight bearing area, a forefoot portion having an anterior plantar surface weight bearing area and an upwardly arched midfoot portion monolithically formed with the forefoot portion and extending between the forefoot and hindfoot portions ,

wherein a posterior end of the upwardly arched midfoot portion is monolithically formed with a single coil extending downwardly with a posterior facing convexly curved surface from the upwardly arched midfoot portion and extending anteriorly with a downward facing convexly curved surface to form a coiled spring which terminates in a free end, the coiled spring being compressed to absorb and expanded to return vertical load during use of the foot keel in a prosthetic foot, and

wherein the anterior end of the hindfoot portion includes an expansion joint hole extending through said hindfoot portion of the foot keel between dorsal and plantar surfaces thereof with an expansion joint extending posteriorly from said expansion joint hole to the posterior edge of the foot keel to form plural expansion struts which create improved biplanar motion capability of the posterior weight bearing area in a prosthetic foot in gait.

2. (cancelled)

3. (previously presented) The foot keel according to claim 1, wherein the hindfoot portion of the foot keel is connected to the upwardly arched midfoot portion by way of the coiled spring.

4. (cancelled)

5. (previously presented) The foot keel according to claim 1, further comprising an attachment fitting mounted on a dorsal surface of the posterior end of the upwardly arched midfoot portion for connecting the foot keel to a supporting structure attached to a leg stump of a person.

6. (previously presented) The foot keel according to claim 1, wherein each of the hindfoot and forefoot portions of the foot keel are upward concavely curved.

7. (cancelled)

8. (previously presented) The foot keel according to claim 1, further comprising a fastening arrangement on a dorsal, posterior surface of the upwardly arched midfoot portion for connecting the lower end of a calf shank to the foot keel.

9. (previously presented) The foot keel according to claim 8, wherein the longitudinal position of the fastening arrangement on the midfoot portion is adjustable.

10. (previously presented) The foot keel according to claim 1, wherein a dorsal aspect of said midfoot portion and the forefoot portion is formed with an upwardly facing concavity, said concavity having a longitudinal axis which is oriented parallel to the frontal plane of the foot keel.

11. (previously presented) The foot keel according to claim 1, wherein the anterior end of said forefoot portion is shaped in an upwardly curved arc to simulate the human toes being dorsiflexed in the heel rise toe off position of the late stance phase of gait.

12. (previously presented) The foot keel according to claim 1, wherein the posterior end of the hindfoot portion is shaped in an upwardly curved arc that reacts to ground reaction forces during heel strike by compressing for shock absorption.

13. (cancelled)

14. (currently amended) A prosthetic foot comprising:
a longitudinally extending foot keel including a hindfoot portion having a posterior plantar surface weight bearing area, a forefoot portion having an anterior plantar surface weight bearing area and an upwardly

arched midfoot portion monolithically formed with the forefoot portion and extending between the forefoot and hindfoot portions,

wherein a posterior end of the upwardly arched midfoot portion is monolithically formed with a single coil extending downwardly with a posterior facing convexly curved surface from the upwardly arched midfoot portion and extending anteriorly with a downward facing convexly curved surface to form a coiled spring which terminates in a free end, the coiled spring being compressed to absorb and expanded to return vertical load during use of the ~~terminates in a free end, the coiled spring being prosthetic foot, and~~

wherein the anterior end of the hindfoot portion includes an expansion joint hole extending through said hindfoot portion of the foot keel between dorsal and plantar surfaces thereof with an expansion joint extending posteriorly from said expansion joint hole to the posterior edge of the foot keel to form plural expansion struts which create improved biplanar motion capability of the posterior weight bearing area in the prosthetic foot in gait.

15. (original) The prosthetic foot according to claim 14, further comprising a resilient, upstanding calf shank having a downward, anteriorly facing convexly curved lower end coupled to the foot keel to form an ankle joint area of the prosthetic foot, the calf shank extending upward to form a lower, prosthetic part of a leg above the ankle joint area for connection with a supporting structure on a person's leg stump.

16. (currently amended) A prosthetic foot comprising:

a longitudinally extending foot keel including posterior and anterior plantar surface weight bearing areas and a non-weight bearing arch shaped midportion extending between the weight bearing areas,

wherein the midportion is formed with a coiled spring which is compressed to absorb and expanded to return vertical load during use of the prosthetic foot,

the prosthetic foot further comprising a resilient, upstanding calf shank having a downward, anteriorly facing convexly curved lower end coupled to the foot keel to form an ankle joint area of the prosthetic foot, the calf shank extending upward to form a lower, prosthetic part of a leg above the ankle joint area for connection with a supporting structure on a person's leg stump,

wherein the calf shank above the ankle joint area is also anteriorly facing convexly curved, and

wherein the anterior of the posterior weight bearing includes an expansion joint hole extending through said foot keel between dorsal and plantar surfaces thereof with an expansion joint extending posteriorly from said expansion joint hole to the posterior edge of the foot keel to form plural expansion struts which create improved biplanar motion capability of the posterior weight bearing area in the prosthetic foot in gait.

17. (original) The prosthetic foot according to claim 15, further comprising a fastening arrangement coupling the calf shank to the foot keel, the fastening arrangement being adjustable to permit adjustment of the alignment of the calf shank and foot keel with respect to one another in the longitudinal direction of the foot keel.

18. (currently amended) A prosthetic foot, comprising:

a longitudinally extending foot keel including posterior and anterior plantar surface weight bearing areas and a non-weight bearing arch shaped midportion extending between the weight bearing areas,

wherein the midportion is formed with a coiled spring which is compressed to absorb and expanded to return vertical load during use of the prosthetic foot,

the prosthetic foot further comprising a resilient, upstanding calf shank having a downward, anteriorly facing convexly curved lower end coupled to the foot keel to form an ankle joint area of the prosthetic foot, the calf shank extending upward to form a lower, prosthetic part of a leg above the ankle joint area for connection with a supporting structure on a person's leg stump, and

a fastening arrangement coupling the calf shank to the foot keel, the fastening arrangement including means for adjusting the inclination at which the calf shank is coupled to the foot keel is the longitudinal direction of the foot keel, and

wherein the anterior of the posterior weight bearing includes an expansion joint hole extending through said foot keel between dorsal and plantar surfaces thereof with an expansion joint extending posteriorly from said expansion joint hole to the posterior edge of the foot keel to form plural expansion struts which create improved biplanar motion capability of the posterior weight bearing area in the prosthetic foot in gait.

19. (original) The prosthetic foot according to claim 15, wherein the calf shank forming the lower, prosthetic part of a leg extends upward in a substantially curvilinear manner so as to be expandable and compressible in response to ground reaction forces therein during gait for storing and releasing energy to improve dynamic response of the prosthetic foot in gait.

20. (cancelled)

21. (previously presented) The prosthetic foot according to claim 14, wherein the posterior plantar surface weight bearing area of the hindfoot portion of the foot keel is connected to the upwardly arched midfoot portion by way of the coiled spring.

22. (cancelled)

23. (previously presented) The prosthetic foot according to claim 14, further comprising a coupling element mounted on a dorsal surface of the posterior end of the upwardly arched midfoot portion for connecting the foot to a supporting structure attached to a leg stump of a person.

24. (previously presented) The prosthetic foot according to claim 14, wherein each of the hindfoot and forefoot portion of the foot keel are upward concavely curved.

25. (currently amended) A method of absorbing and returning

vertical load in a prosthetic foot during varied activities, wherein the prosthetic foot has a foot keel with a hindfoot portion having a posterior plantar surface weight bearing area, a forefoot portion having an anterior plantar surface weight bearing area and an upwardly arched midfoot portion extending between the forefoot and hindfoot portions, wherein a posterior end of the upwardly arched midfoot portion is monolithically formed with a single coil extending downwardly with a posterior facing convexly curved surface from the upwardly arched midfoot portion and extending anteriorly with a downward facing convexly curved surface to form a coiled spring which terminates in a free end, and wherein the anterior end of the hindfoot portion includes an expansion joint hole extending through said hindfoot portion of the foot keel between dorsal and plantar surfaces thereof with an expansion joint extending posteriorly from said expansion joint hole to the posterior edge of the foot keel to form plural expansion struts which create improved biplanar motion capability of the posterior weight bearing area in the prosthetic foot in gait the method including:

elastically loading the upwardly arched midfoot portion by expansion and the coiled spring which terminates in a free end; of the midfoot portion by compression in response to vertically directed forces on the prosthetic foot, and

returning energy stored by the upwardly arched midfoot portion and the compressed coiled spring of the midfoot portion upon lowering the vertically directed forces on the prosthetic foot.

26. (previously presented) The method according to claim 25, wherein each of said forefoot and hindfoot portions of the foot keel are upward concavely curved, and wherein the method further comprises absorbing and returning vertical load upon heel-toe ground contact of the prosthetic foot in gait by the respective compression and expansion of the curvatures of the forefoot and hindfoot portions of the foot keel.